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MOC108 Firmware Programming

Abstract

This document describes how to program firmware for MOC108, including two methods: programming by UART, or programming by SPI.

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Version History

Date	Version	Author	Update content
2017-11-16	V1.0	Snow Yang	First release

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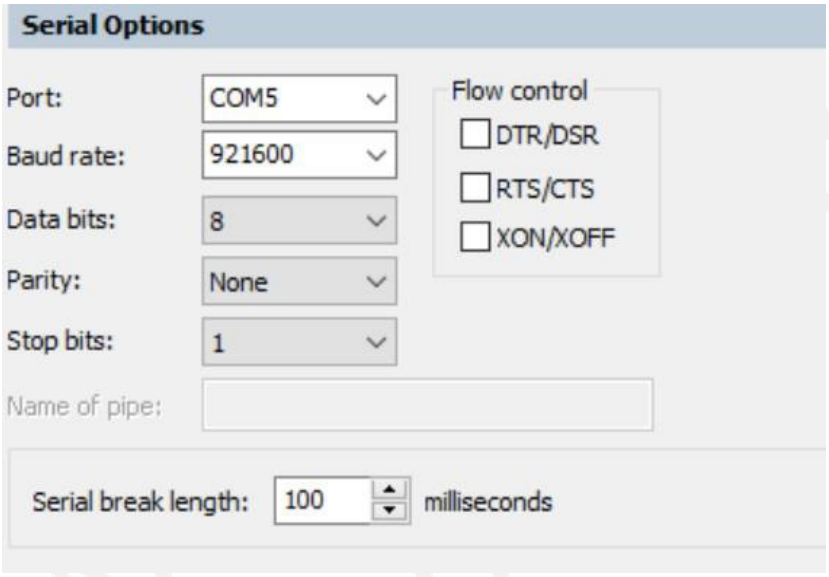
1. Programming by UART in Bootloader mode

This section is about how to upgrade application firmware by UART in Bootloader mode.

1.1 Connect the user UART

Power on the development board, and connect user UART to PC, and set serial terminal as below:



1.2 Enter into Bootloader mode

Keep Boot button pressed, and then reset the board, and serial terminal will show below information:

```
|=========================================================|
|                  MOC108 BOOTLOADER MENU                 |
|---------------------------------------------------------|
| Comamnd | Arguments         | Description               |
|---------+-------------------+---------------------------|
| read    | <address> <size>  | read flash                |
|---------+-------------------+---------------------------|
| write   | <address>         | write flash               |
|---------+-------------------+---------------------------|
| erase   | <address> <size>  | erase flash               |
|---------+-------------------+---------------------------|
| boot    | <mode>            | boot to APP, ATE or QC    |
|---------+-------------------+---------------------------|
| reboot  |                   | reboot                    |
|=========================================================|
@ Author  : Snow Yang
@ Version : 1.1.0
@ Date    : Nov  3 2017 17:31:24
```

1.3 Get help command

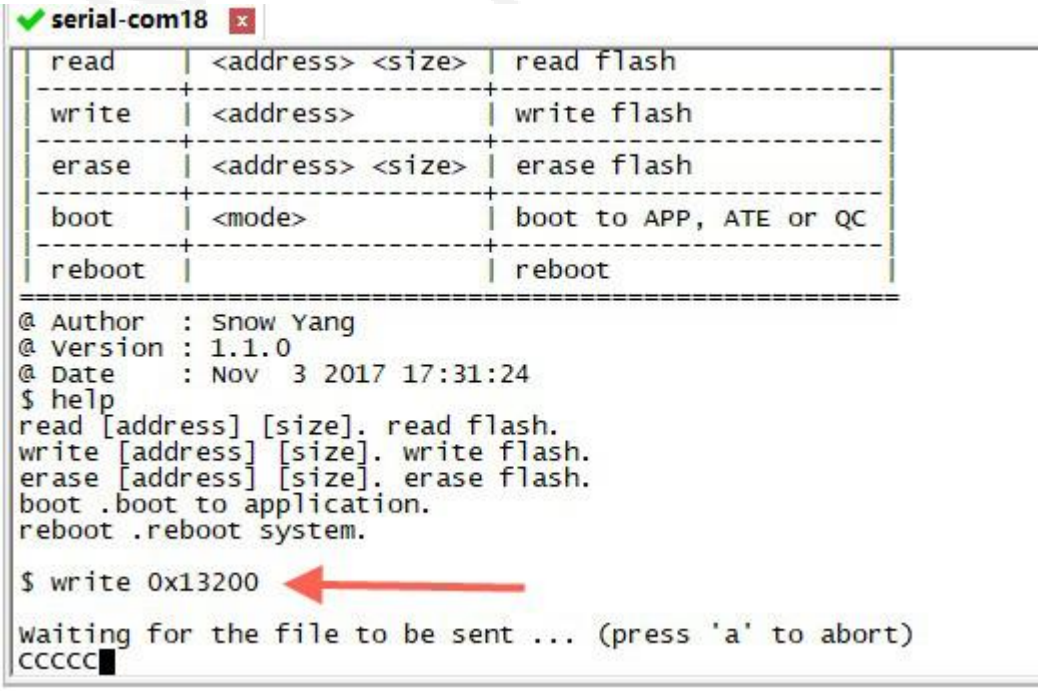
Input help command , it will output help information:

```
|-----------------------------------------------------|
| Comamnd | Arguments         | Description           |
|---------+-------------------+-----------------------|
| read    | <address> <size>  | read flash            |
|---------+-------------------+-----------------------|
| write   | <address>         | write flash           |
|---------+-------------------+-----------------------|
| erase   | <address> <size>  | erase flash           |
|---------+-------------------+-----------------------|
| boot    | <mode>            | boot to APP, ATE or QC |
|---------+-------------------+-----------------------|
| reboot  |                   | reboot                |
=======================================================
@ Author  : Snow Yang
@ Version : 1.1.0
@ Date    : Nov  3 2017 17:31:24
$ help
read [address] [size]. read flash.
write [address] [size]. write flash.
erase [address] [size]. erase flash.
boot .boot to application.
reboot .reboot system.

$
```

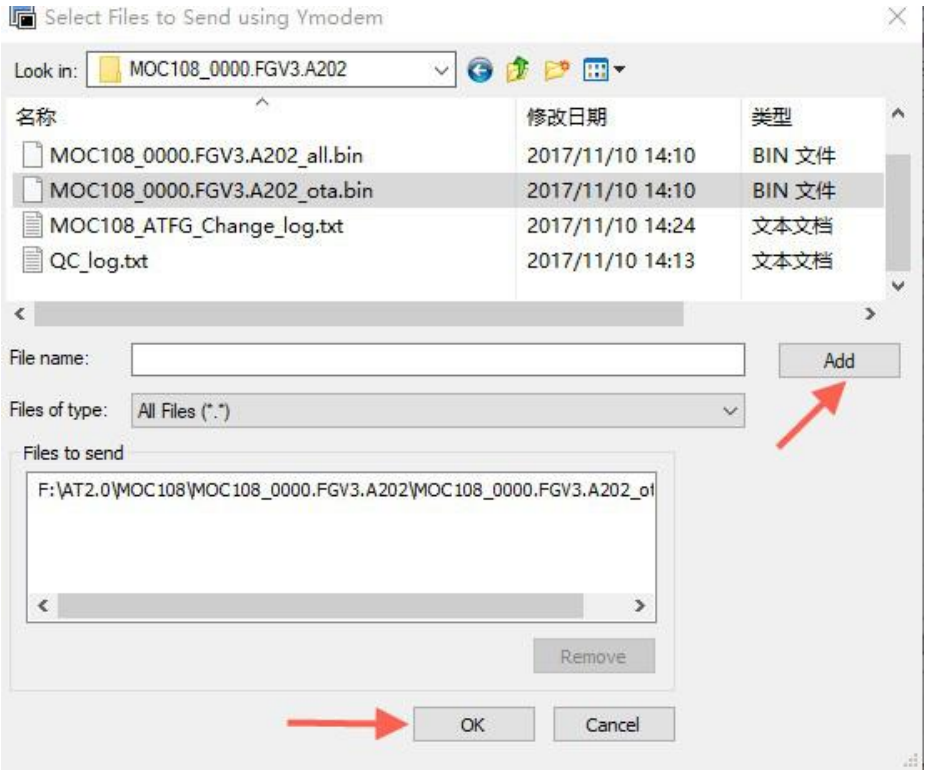
1.4 Upgrade firmware

Input write [address] command，to use Ymodem protocol to program files into certain address(Start address) in flash.（write command will erase and then program.）。

Input write 0x13200, to update application firmware, as below:



Choose menu bar-Transer- Send Ymodem, and select the firmware, as below picture:

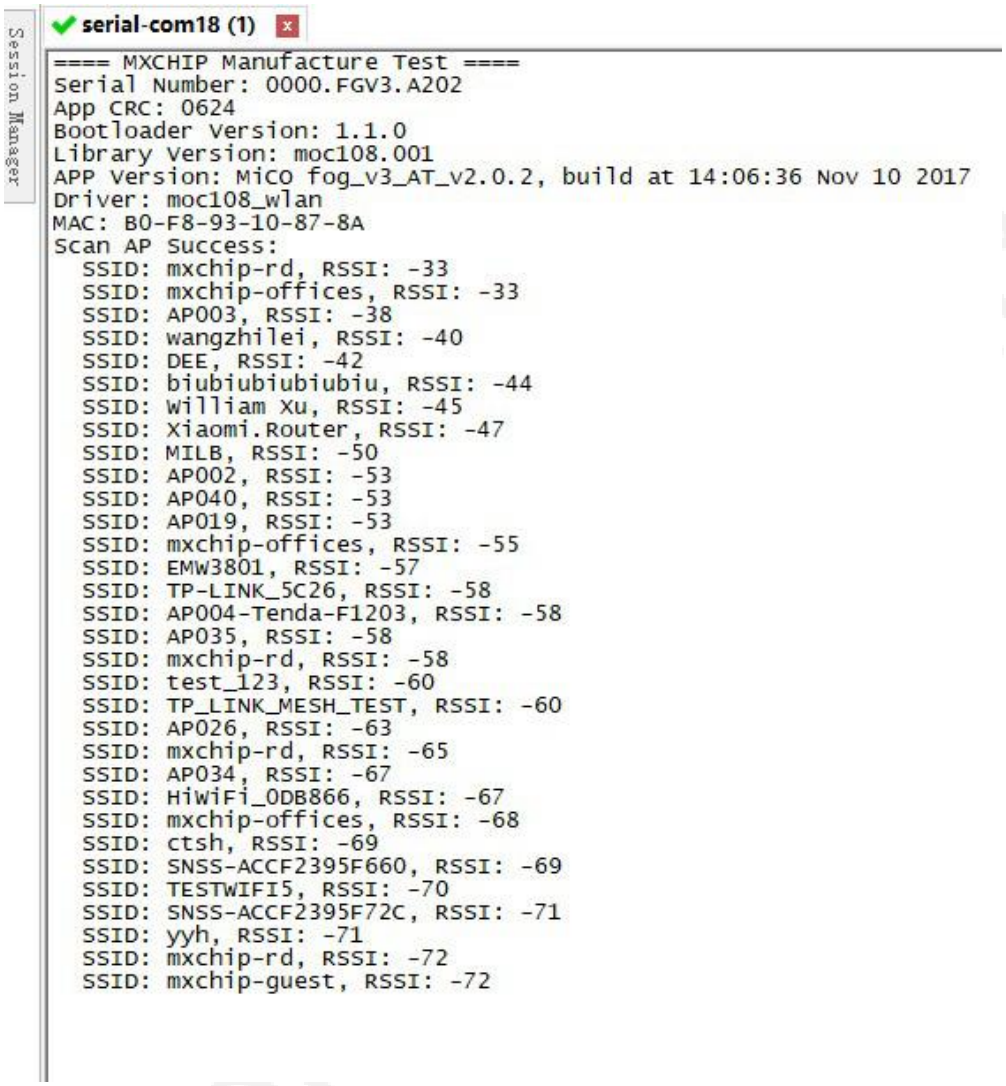


Choose the ota.bin that you want to program, and click “Add” and “OK” to start programming. After programming successfully, it will show below information:

```
=============================================================
|                  MOC108 BOOTLOADER MENU                   |
|-----------------------------------------------------------|
| Comamnd | Arguments          | Description                |
|---------+--------------------+----------------------------|
| read    | <address> <size>   | read flash                 |
|---------+--------------------+----------------------------|
| write   | <address>          | write flash                |
|---------+--------------------+----------------------------|
| erase   | <address> <size>   | erase flash                |
|---------+--------------------+----------------------------|
| boot    | <mode>             | boot to APP, ATE or QC     |
|---------+--------------------+----------------------------|
| reboot  |                    | reboot                     |
=============================================================
@ Author  : Snow Yang
@ Version : 1.1.0
@ Date    : Nov  3 2017 17:31:24
$ help
read [address] [size]. read flash.
write [address] [size]. write flash.
erase [address] [size]. erase flash.
boot .boot to application.
reboot .reboot system.

$ write 0x13200

Waiting for the file to be sent ... (press 'a' to abort)
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
Starting ymodem transfer.  Press Ctrl+C to cancel.
Transferring MOC108_0000.FGV3.A202_ota.bin...
  100%     464 KB      10 KB/sec    00:00:43       0 Errors

Programming Completed Successfully!

$
```

1.5 Verify programming result

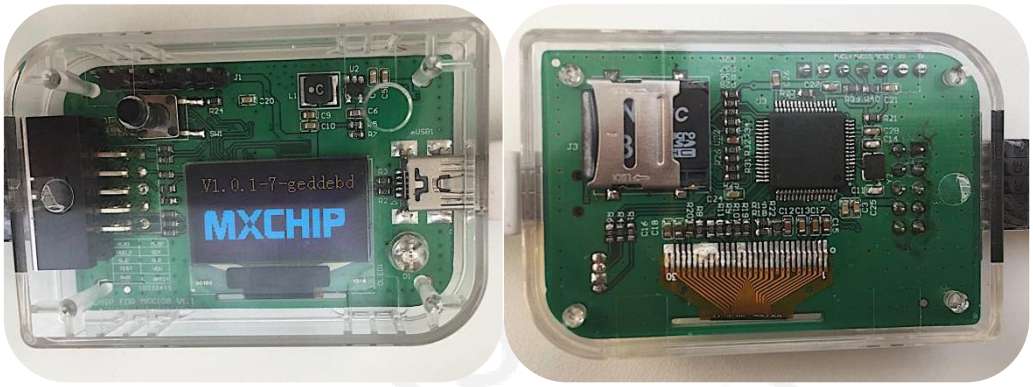
Keep Boot pin low, STATUS pin high, and reset the board, then it will enter into QC mode, and you can get the firmware version from user UART. The serial parameter is same as boot mode. Reference QC log is as below:



2. Programming by SPI with hardware downloader

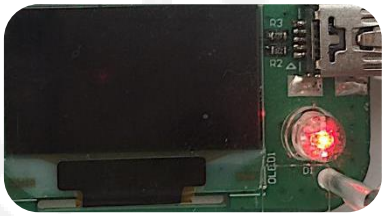
EMWE-MOC108 is a hardware downloader for MOC108. It can program firmware into MOC108 by Flash SPI interface.

It supports three modes: write mode, read mode, and MAC mode.

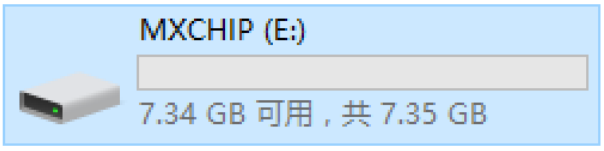


2.1 Update downloader firmware and MOC108 firmware

Enter into downloader firmware program mode: Keep the button pressed, and insert USB, the LED will light red, as below:



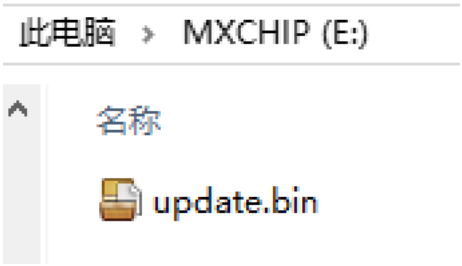
There will be a MXHIP disk in PC, as below:



2.1.1 Update downloader firmware

There is a firmware for the MCU of downloader, and the update method as below:

1. Copy update.bin to the “MXCHIP” disk, as below:

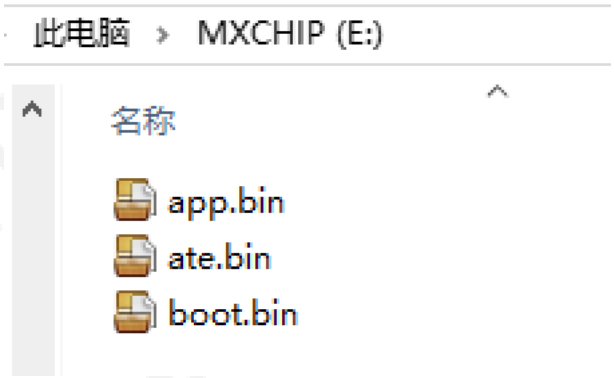


Then pull out and insert the USB cable again. When it shows MXCHIP logo on the downloader's screen, the update is successful.

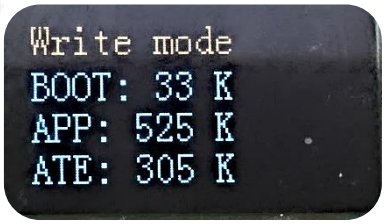
2.1.2 Update MOC108 firmware

There are three types of firmware: Boot, app, ate. You can update one type of firmware ,or update two or three at one time.

1. Copy the firmware you want to update into MXCHP disk. Below picture is an example of updating three firmware at one time.



2. Pull out and insert USB cable again, the screen will show the firmware information:



Notice:

The bin file names are fixed. Keep them as "app.bin", "ate.bin", "boot.bin". Don't modify the bin file name, otherwise the downloader can't find the bin files.

2.2 Working modes of the downloader

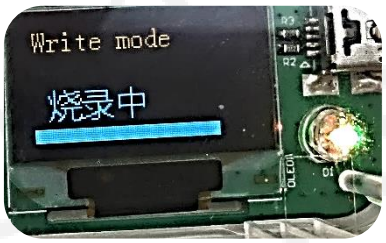
Switch between the three modes by the button.

2.2.1 Write mode

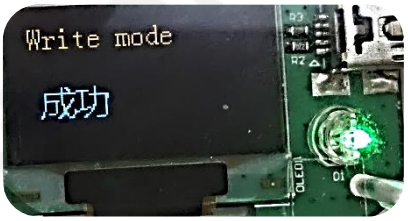
Write mode is to program firmware into MOC108.

If the firmware of MOC108 has already been copied to the downloader, the downloader will enter into write mode as default when powered on, and the LED will light as yellow. Please refer to below picture:

After MOC108 chip or module is connected to the downloader, the programming will start automatically, and the LED will shine as yellow. Please refer to below picture:



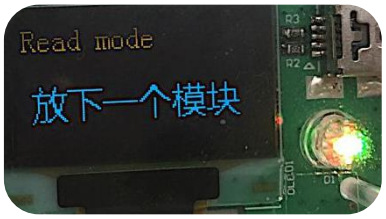
After the process bar is completed, the screen will show success "成功", and the LED will light as green. This means the programming is successful. Please refer to below picture:



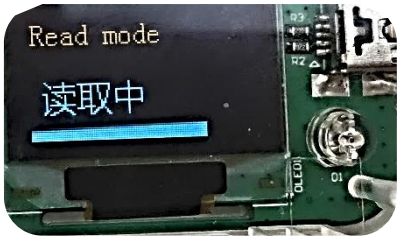
2.2.2 Read mode

Read mode is to read the content of MOC108 flash.

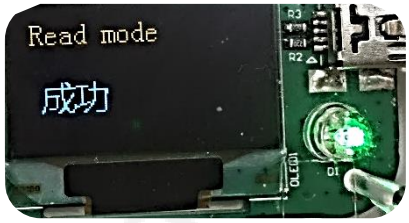
Press the button once to switch between the three modes. Please refer to below picture for read mode:



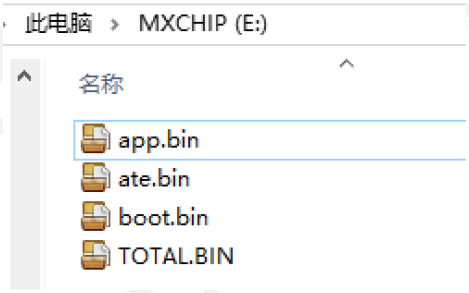
When MOC108 chip or module is connected, it will read flash automatically. Please refer to below picture:



After the process bar is completed, the screen shows success “成功”, it means read successfully.



After reading successfully, entering into writing mode, there is a “TOTAL.BIN” in the disk, and this is the content in flash. Please refer to below picture:



2.2.3 MAC mode

MAC mode is to write the MAC address of MOC108.

Press the button once to switch between the three modes. Please refer to below picture for MAC mode:

Open the serial terminal, and select the STMicroelectronics Virtual COM Port. Set the baud rate as 115200, and HEX mode, to send MAC address, please refer to below picture:

串口调试助手
串口设置
串口号 COM9
波特率 115200
校验位 NONE
数据位 8
停止位 1
关闭
接收区设置
接收转向文件...
自动换行显示
显示接收时间
十六进制显示
暂停接收显示
保存数据 清除接收
发送区设置
启用文件数据源...
自动发送附加位
发送完自动清空
按十六进制发送
发送周期 50 ms
文件载入 清除输入
串口数据接收
@野人 V4.2.3
1.DCD 2.RXD 3.TXD 4.DTR 5.GND 6.DSR 7.RTS 8.CTS 9.RI
C8 93 46 12 34 56
发送
就绪!
TX:6
RX:0
复位计数

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